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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2022/2023

DFN5124 – FUNDAMENTAL OF FINANCE

(All sections / Groups)

14 JULY 2023
9.00 a.m – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **ELEVEN (11)** printed pages (including cover page) with:
Section A: Twenty (20) multiple choice questions (40%)
Section B: Three (3) working problems (60%)
2. Answer **ALL** questions. Marks are shown at the end of each question.
3. Please write all your answers in the MCQ test sheet and Answer Booklet provided.

Section A: 20 Multiple Choice Questions (40 marks)

1. Net working capital is defined as:

- A. the depreciated book value of a firm's fixed assets.
- B. the value of a firm's current assets.
- C. available cash minus current liabilities.
- D. total assets minus total liabilities.
- E. current assets minus current liabilities.

2. Which one of the following terms refers to the length of time a firm grants its customers to pay for their purchases?

- A. Lockbox period
- B. Discount period
- C. Credit period
- D. Cash cycle
- E. Receivables turnover period

3. On May 11, you purchased RM3,700 of merchandise from a supplier. The terms of the sale were 1/5, net 15. The discounted amount due is _____ which is payable no later than _____.

- A. RM2,960; May 16
- B. RM3,515; May 26
- C. RM3,515; May 16
- D. RM3,663; May 16
- E. RM3,663; May 26

4. Stan Lee's sells 4,300 carpets a year at an average price per carpet of RM1,490. The carrying cost per unit is RM21.63. The company orders 500 carpets at a time and has a fixed order cost of RM69 per order. The carpets are sold out before they are restocked. What is the economic order quantity?

- A. 147 carpets
- B. 166 carpets
- C. 184 carpets
- D. 315 carpets
- E. 348 carpets

5. Miller & Miller sells earnings forecasts for Chinese securities. Its credit terms are 1/5, net 15. Based on experience, 75 percent of all customers take the discount. What is the average collection period?

- A. 6.0 days
- B. 6.5 days
- C. 7.0 day
- D. 7.5 days
- E. 8.0 days

Continued...

6. Dividends are best defined as:
- A. cash payments to shareholders.
 - B. cash payments to either bondholders or shareholders.
 - C. cash or stock payments to shareholders.
 - D. cash or stock payments to either bondholders or shareholders.
 - E. distributions of stock to current shareholders.
7. Which one of the following will increase the current value of a stock?
- A. Decrease in the dividend growth rate
 - B. Increase in the required return
 - C. Increase in the market rate of return
 - D. Decrease in the expected dividend for next year
 - E. Increase in the capital gains yield
8. A preferred stock sells for RM48.20 a share and has a market return of 15.65 percent. What is the dividend amount?
- A. RM 6.93
 - B. RM 6.80
 - C. RM 7.25
 - D. RM 7.42
 - E. RM 7.54
9. Plastics, Inc. will pay an annual dividend of RM1.85 next year. The company just announced that future dividends will be increasing by 2.25 percent annually. How much are you willing to pay for one share of this stock if you require a 16 percent return?
- A. RM13.45
 - B. RM13.61
 - C. RM13.76
 - D. RM14.02
 - E. RM14.45
10. What is the market called that allows shareholders to resell their shares to other investors?
- A. Primary
 - B. Proxy
 - C. Secondary
 - D. Inside
 - E. Initial

Continued...

11. The lower the standard deviation of returns on a security, the _____ the expected rate of return and the _____ the risk.

- A. lower; higher
- B. lower; lower
- C. higher; lower
- D. higher; higher
- E. You cannot determine anything about the expected rate of return from the standard deviation.

12. Which one of the following best describes a portfolio?

- A. Risky security
- B. Security equally as risky as the overall market
- C. New issue of stock
- D. Group of assets held by an investor
- E. Investment in a risk-free security

13. On which one of the following dates is the determination made as to which shareholders will receive a dividend payment?

- A. Date of record
- B. Ex-dividend date
- C. Payment date
- D. Declaration date
- E. Public announcement date

14. Joseph Turner and Sons has 125,000 shares of stock outstanding. The firm has extra cash so it announced this morning that it is willing to repurchase 25,000 of its shares.

What type of offer is the firm making?

- A. Rights offer
- B. Secondary issue
- C. Targeted repurchase
- D. Tender offer
- E. Private issue

15. Mercury Homes just declared a 4-for 3 stock splits. Which of the following occurred as a result of this split?

- I. number of shares outstanding increased by 1/3
 - II. number of shares outstanding decreased by 1/4
 - III. price per share increased by 1/3
 - IV. price per share decreased by 1/4
- A. I only
 - B. I and III only
 - C. I and IV only
 - D. II and III only
 - E. II and IV only

Continued...

16. Which one of the following commences on the day inventory is purchased and ends on the day the payment for that inventory is collected? Assume all sales and purchases are on credit.

- A. Inventory period
- B. Accounts receivable period
- C. Accounts payable period
- D. Operating cycle
- E. Cash cycle

17. The accounts receivable period is the time that elapses between the _____ and the _____.

- A. purchase of inventory; payment to the supplier
- B. purchase of inventory; collection of the receivable
- C. sale of inventory; payment to supplier
- D. sale of inventory; collection of the receivable
- E. sale of inventory; billing to customer

18. The local toy store has to restock a popular video game every 4 days as it completely sells out in that period of time. What is the inventory turnover rate for this game?

- A. 4.00 times
- B. 4.25 times
- C. 57.14 times
- D. 90.00 times
- E. 91.25 times

19. Jenny's has annual sales of RM367,200 and cost of goods sold of RM198,600. The average accounts receivable balance is RM16,400. How many days on average does it take the firm to collect its accounts receivable?

- A. 16.08 days
- B. 16.30 days
- C. 17.27 days
- D. 17.50 days
- E. 18.33 days

20. Which one of the following statements concerning financial leverage is correct?

- A. Financial leverage increases profits and decreases losses.
- B. Financial leverage has no effect on a firm's return on equity.
- C. Financial leverage refers to the use of common stock.
- D. Financial leverage magnifies both profits and losses.
- E. Increasing financial leverage will always decrease the earnings per share.

Continued...

SECTION B (60 Marks)**Question 1**

As an analyst in Bulls & Bear Investment Company, you have derived the following information about 2 securities from past data:

Securities	Expected returns (%)	Standard deviation (%)
A	15	15
B	5	10
Correlation AB	-0.7	

Based on the above information

- a) Compute the expected returns for this portfolio, if the investor invests 75% in Stock A and 25% in Stock B.
(5 marks)
- b) Compute the standard deviation for this portfolio, assuming the investor invests 75% in Stock A and 25% in Stock B.
(13 marks)
- c) Describe your results from the perspective of portfolio risk.
(2 marks)

(TOTAL: 20 MARKS)

Question 2

- a) Explain three (3) advantages of net present value method in capital budgeting.
(6 marks)
- b) Cempaka Berhad is attempting to evaluate the feasibility of investing RM95,000 in a piece of equipment that has a 5-year life. The firm has estimated cash inflows associated with the proposal as shown in the following table. The firm has a 12% cost of capital.

Year (t)	Cash Inflows (CF _t) RM
1	20,000
2	25,000
3	30,000
4	35,000
5	40,000

Continued...

- i. Compute the payback period for the proposed investment.
(5 marks)
 - ii. Compute the net present value (NPV) for the proposed investment.
(5 marks)
 - iii. Compute the profitability index (PI) for the proposed investment.
(4 marks)
- (TOTAL: 20 MARKS)**

Question 3

Brilliant Technology Berhad holds a combination of debt, common shares and preferred shares in its capital structure. The optimal capital structure of the company based on the information below:

Capital Resources	Percentage of Financing (%)
Long term debt	25
Preference Shares	25
Ordinary Shares	50

Bond:

The company can issue bonds that have a maturity period of 20 years with a face value of RM1,000. The coupon rate for the bonds is 9% and is sold at the price of RM980. The cost of issuing the bonds is 2% from the face value of the bonds. The rate of corporate tax is 40%.

Preference Shares:

The company found that it can issue preference shares at the prices of RM7.10 per share with annual dividend payment of RM0.80. The cost involved in issuing and selling shares is RM0.50 per share.

Ordinary Shares:

The ordinary shares of the company are sold at the present price of RM5.20 per share. The dividend that is expected to be paid at the end of next year is RM0.50. The growth rate of dividends is constant, that is at 8% every year. The company must pay the flotation cost of RM0.10 per share.

Compute:

- i. Cost of debt after tax.
(6 marks)

Continued...

- ii. Cost of preferred shares (4 marks)
- iii. Cost of common share (5 marks)
- iv. The weighted average cost of capital (WACC) (5 marks)

(TOTAL: 20 MARKS)

Continued...

DFN5124 FUNDAMENTAL OF FINANCE
Selected Formula

1. $NPV = \sum_{t=0}^n \frac{CF_t}{(1+r)^t} - C_0$
2. $E(R) = \sum_{i=1}^n r_i P_i$
3. $\sigma^2 = \sum_{j=1}^n (r_j - \bar{r})^2 \times P_{r_j}$
4. $WACC = (w_i r_i) + (w_p r_p) + (w_s r_s)$
5. $r_d = \frac{I + \frac{\$1000 - N_d}{n}}{\frac{N_d + \$1000}{2}}$
6. $r_d \text{ after tax} = r_d (1-T)$
7. $r_s = R_F + [b \times (r_m - R_F)]$
8. $OC = AAI + ACP$
9. $CCC = OC - APP$
10. $EOQ = \sqrt{\frac{2 \times S \times O}{C}}$

Continued...

Present Value and Future Value Tables

Table A-1 Future Value Interest Factors for One Dollar Compounded at k Percent for n Periods: $FVIF_{k,n} = (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.4400	1.4536	1.5625	1.6900
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.7280	1.8066	1.9531	2.1970
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8106	2.0736	2.3642	2.4414	2.8561
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.4883	2.9316	3.0518	3.7129
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.9860	3.6352	3.8147	4.8268
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6609	2.8282	3.5832	4.5077	4.7084	6.2749
8	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1438	2.3045	2.4760	2.6584	2.8526	3.0609	3.2784	4.2998	5.5805	5.9605	8.1673
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0046	3.2518	3.5179	3.8030	5.1588	6.9310	7.4506	10.604
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	6.1917	8.5044	9.3132	13.786
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1516	3.4785	3.8359	4.2262	4.6524	5.1173	7.4301	10.657	11.542	17.922
12	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503	5.9369	9.161	13.215	14.552	23.298
13	1.1381	1.2936	1.4665	1.6654	1.8858	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8858	10.699	16.306	18.190	30.282
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.3194	4.8981	5.5348	6.2313	7.0075	7.8757	12.839	20.319	22.737	39.374
15	1.1610	1.3450	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7846	5.4736	6.2543	7.1379	8.1371	9.2655	15.407	25.196	28.422	51.186
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3576	10.748	18.488	31.243	35.527	66.542
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1598	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.761	12.468	22.186	38.741	44.409	86.504
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3790	3.9960	4.7171	5.5589	6.5436	7.6900	9.0243	10.575	12.378	14.463	26.623	48.039	55.511	112.455
19	1.2081	1.4568	1.7535	2.1006	2.5270	3.0256	3.6165	4.3157	5.1417	6.1199	7.2633	8.6128	10.197	12.056	14.232	16.777	31.948	59.568	69.389	146.192
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6616	5.6044	6.7275	8.0621	9.6463	11.523	13.743	16.367	19.461	38.338	73.864	86.736	190.650
21	1.2324	1.5157	1.8603	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	8.9492	10.804	13.021	15.668	18.822	22.574	46.005	91.592	108.420	247.065
22	1.2447	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.100	14.714	17.861	21.545	26.186	55.206	113.574	135.525	321.164
23	1.2572	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.026	13.552	16.627	20.362	24.891	30.376	66.247	140.831	169.407	417.539
24	1.2697	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8487	12.239	15.179	18.788	23.212	28.625	35.236	79.497	174.631	217.258	542.801
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.835	13.585	17.006	21.231	26.462	32.919	40.874	95.366	216.542	264.698	705.641
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.063	13.268	17.449	22.892	29.960	39.116	50.550	66.212	85.850	237.376	634.620	807.794	*
35	1.4166	1.9999	2.8139	3.9461	5.5160	7.6661	10.677	14.785	20.414	28.102	38.575	52.800	72.069	96.190	133.178	180.314	596.668	*	*	*
40	1.4908	2.0399	2.8983	4.1038	5.7918	8.1473	11.424	15.968	22.251	30.913	42.816	59.436	81.437	111.834	153.152	209.164	708.802	*	*	*
45	1.4889	2.2080	3.2620	4.8810	7.0490	10.286	14.974	21.725	31.408	45.259	65.001	93.051	132.782	188.684	267.864	378.721	*	*	*	*
50	1.6446	2.6916	4.3839	7.1057	11.467	18.420	29.457	46.902	74.358	117.391	184.565	289.002	450.736	700.233	*	*	*	*	*	*

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at k Percent for n Periods: $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500	2.1600	2.2000	2.2400	2.2500	2.3000
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100	3.3421	3.3744	3.4069	3.4396	3.4725	3.5056	3.6400	3.7776	3.8125	3.9900
4	4.0604	4.1216	4.1936	4.2665	4.3401	4.4144	4.4895	4.5651	4.6421	4.7195	4.7977	4.8764	4.9559	5.0361	5.1170	5.1986	5.5600	5.8842	5.9756	6.3700
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101	6.7424	6.8771	7.4416	8.0484	8.2076	9.0431
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.9299	10.960	11.259	12.756
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872	9.7833	10.089	10.405	10.730	11.067	11.414	12.816	14.815	15.073	17.583
8	8.2857	8.5830	8.8823	9.2142	9.5491	9.8975	10.260	10.637	11.028	11.436	11.859	12.300	12.757	13.233	13.727	14.240	16.499	19.123	19.842	23.856
9	9.3685	9.7546	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.519	20.799	24.712	25.802	32.015
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	25.659	31.643	33.253	42.619
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.045	24.349	25.733	32.150	40.238	42.566	56.405
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.945	20.141	21.384	22.713	24.133	25.650	27.277	29.002	30.850	38.850	50.895	54.268	74.327
13	13.809	14.680	15.619	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212	28.029	29.985	32.089	34.352	36.786	48.497	64.110	68.760	97.625
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505	43.672	59.196	80.496	86.949	127.913
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.589	51.660	72.035	100.815	109.687	167.286
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39.190	42.753	46.672	50.980	55.717	60.925	87.442	126.011	138.109	218.472
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.884	53.739	59.118	65.075	71.673	105.931	157.253	173.636	285.044
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	50.386	55.750	61.725	68.394	75.836	84.141	128.117	195.994	218.045	371.518
19	20.811	22.841	25.117	27.571	30.539	33.760	37.379	41.446	46.018	51.159	56.936	63.440	70.749	78.989	88.212	98.603	154.740	244.033	273.556	483.973
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.283	72.052	80.947	91.025	102.444	115.380	186.688	303.601	342.945	630.165
21	23.230	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.699	92.470	104.768	118.810	134.841	225.026	377.465	429.681	820.215
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	81.214	92.503	105.491	120.436	138.810	157.415	271.031	469.056	538.101	*
23	25.716	28.845	32.453	36.618	41.430	46.996	53.436	60.983	69.532	79.543	91.148	104.603	120.205	138.297	159.276	183.601	326.237	582.630	673.626	*
24	25.573	30.422	34.426	39.983	44.502	50.016	57.117	66.765	76.790	88.497	102.174	118.155	136.831	158.559	184.168	213.978	392.844	723.461	843.033	*
25	28.243	33.030	36.459	41.645	47.727	54.855	63.240	73.106	84.701	98.347	114.413	133.334	155.629	181.871	212.793	240.214	471.881	898.092	*	*
30	34.785	40.568	47.575	56.085	66.439	79.050	94.461	113.283	136.308	164.494	199.021	241.333	293.199	356.787	434.745	530.312	*	*	*	*
35	51.660	49.994	60.602	73.552	90.326	114.435	138.237	172.317	215.711	271.024	341.590	431.663	546.081	693.573	881.170	*	*	*	*	*
36	43.077	51.984	63.276	77.695	95.836	119.121	148.913	187.102	236.125	299.127	380.164	484.463	618.749	791.673	*	*	*	*	*	*
40	48.886	60.402	76.401	95.026	120.800	154.762	199.635	259.057	337.882	442.593	581.826	767.091	*	*	*	*	*	*	*	*
50	64.403	84.579	112.797	152.667	209.348	290.336	406.529	573.770	815.084	*	*	*	*	*	*	*	*	*	*	*

Present Value and Future Value Tables

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2781	0.2218	0.2097	0.1584
8	0.9235	0.8553	0.7914	0.7327	0.6788	0.6274	0.5826	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2326	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3229	0.2968	0.2729	0.2507	0.2307	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5258	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4940	0.4410	0.3937	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4648	0.4150	0.3677	0.3282	0.2927	0.2597	0.2302	0.2042	0.1825	0.1635	0.1462	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2302	0.2006	0.1787	0.1597	0.1425	0.1262	0.0779	0.0492	0.0444	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2384	0.2060	0.1827	0.1599	0.1401	0.1229	0.1079	0.0648	0.0397	0.0352	0.0185
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0948	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0688	0.0580	0.0492	0.0411	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0658	0.0532	0.0431	0.0348	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0387	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	*
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	*	*
40	0.6717	0.4529	0.3066	0.2063	0.1430	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	*	*	*
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	*	*	*	*

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at k Percent for n Periods: $PVIFA = [1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4508	1.4400	1.3689
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6953	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6993	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7468	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	3.8732	3.4212	3.3289	2.9247
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2486	5.9952	5.7590	5.5370	5.3282	5.1317	4.9484	4.7716	4.6065	4.0310	3.5855	3.4631	3.0190
10	9.4713	8.9626	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.1925	3.6819	3.5705	3.0615
11	10.3688	9.7868	9.2526	8.7605	8.3004	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6899	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.2550	10.5755	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.1344	11.3488	10.6355	9.9656	9.3936	8.8527	8.3577	7.9038	7.4809	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.0064	12.1068	11.2396	10.5633	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.8650	12.8499	11.9308	11.1188	10.3809	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.7188	13.5788	12.5611	11.6532	10.8338	10.1068	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.5662	14.2922	13.1661	12.1661	11.2740	10.4777	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.9099	3.2948
18	16.3998	14.9922	13.7541	12.6558	11.6900	10.8288	10.0599	9.3719	8.7556	8.2014	7.7016	7.2487	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.2266	15.6788	14.3244	13.1344	12.0855	11.1588	10.3366	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.0466	16.3511	14.8777	13.5900	12.4622	11.4700	10.5948	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8896	4.1103	3.9539	3.3158
21	18.8577	17.0111	15.4515	14.0299	12.8211	11.7648	10.8366	10.0177	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.6600	17.5588	15.9377	14.4511	13.1633	12.0422	11.0611	10.2019	9.4424	8.7715	8.1757	7.6446	7.1695	6.7428	6.3587	6.0113	4.9094	4.1300	3.9705	3.3200
23	20.4545	18.2922	16.4444	14.8577	13.4899	12.3033	11.2722	10.3719	9.5802	8.8832	8.2664	7.7188	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9784	3.3252
24	21.2423	18.9148	16.9306	15.2471	13.7999	12.5590	11.4772	10.5529	9.7066	9.0487	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9341	4.1428	3.9814	3.3254
25	22.0233	19.5233	17.4133	15.5622	14.0644	12.7633	11.6554	10.6575	9.8226	9.0770	8.3712	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.8088	22.3968	19.6000	17.2922	15.3732	13.7855	12.4409	11.2588	10.2748	9.4209	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.4098	24.9998	21.4887	18.6665	16.3744	14.4998	12.9448	11.6655	10.5667	9.6442	8.8552	8.1755	7.5856	7.0790	6.6106	6.2163	4.9915	4.1644	3.9984	3.3330
36	30.1068	25.4898	21.8302	18.9688	16.5547	14.6213	13.0205	11.7177	10.6182	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.8335	27.3555	23.1155	19.7993	17.1599	15.0468	13.3332	11.9257	10.7577	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.1968	31.4248	25.7300	22.4822	18.2566	15.7623	13.8011	12.2333	10.9629	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9965	4.1666	3.9998	3.3333